



Pfc. Jeremiah Balete, Spc. Xavier Loretto, and Pfc. Gregory Bettencourt, 25th Brigade Support Battalion, 1st Stryker Brigade Combat Team, 25th Infantry Division, at Fort Wainwright, Alaska, repair full up power packs instead of replacing them, saving the unit more than \$200,000 on each pack repaired. (Photos by Maj. Karl Beier)

A Repair Versus Replace Maintenance Culture

The harsh budgetary environment led the 25th Brigade Support Battalion to change how it conducts maintenance, ultimately saving millions of dollars.

■ By Chief Warrant Officer 4 Steven Dewey

Following drastic budget cuts that occurred within the 1st Stryker Brigade Combat Team, 25th Infantry Division (1–25th SBCT), at the beginning of fiscal year 2013, the brigade analyzed maintenance trends and class IX (repair parts) expenses and identified that nearly \$4 million had been spent over a 90-day period. After wargaming

ways to train and keep readiness high while keeping costs low, a plan was approved by the brigade commander to bring field-level engine repair, tire assembly repair, and battery charging to the brigade level for resourcing and management oversight.

Within the first 90 days, savings in these three maintenance areas reached nearly \$3.5 million. This savings came

from in-depth troubleshooting of engine maintenance issues and from repairing major assemblies instead of replacing subassemblies.

Field-Level Engine Repair

In order to save money in maintenance and repair, 1–25th SBCT developed and refined troubleshooting procedures and engaged in robust

training for –10-level maintainers. Focusing on “back to basics” maintenance practices allowed the brigade to save money in repair costs so that money could be allocated to training and other readiness resources.

Using a local dealer for parts provided cost savings for many major assembly repairs. For example, a \$20 seal from a local dealer fixed a \$230,000 full up power pack (FUPP). The unit also saved approximately \$900 buying a Caterpillar engine compressor from a local vendor at a cost of \$700; if ordered through the Army supply system, the compressor would have cost approximately \$1,600.

The Caterpillar 3126 FUPP powers many Stryker variants. The FUPP includes the engine and transmission and costs just over \$230,000, according to the January 2013 Federal Logistics Data (FEDLOG).

Over the past 10 years, it be-

came common practice to remove a faulty FUPP and send it to sustainment-level maintenance for repair. Given the extreme cost of this component, developing a process for local repair became a priority.

During the second quarter of fiscal year 2013, a total of 13 FUPPs were repaired by purchasing local, low-cost repair parts, such as temperature switches, main seals, gasket sets, transmission wire harnesses, transmission pans, and manifold replacements, from the local Caterpillar dealer. In all cases, the technical manual suggested replacing the FUPP as a means of repair. The total savings realized during the quarter by replacing parts was just under \$3 million dollars.

The engine component of the FUPP (NSN 2815–01–505–1476) alone costs \$25,152, and the stand-alone Stryker transmission cost

\$27,662. With the FUPP costing \$170,000 more than its raw materials, repairing should be a priority in financially difficult times.

Repair versus replacement of other equipment yielded significant savings, too. For example, several load handling system engines were repaired by replacing a \$200 head gasket rather than replacing the entire \$48,000 engine as suggested in the –20 manual. Recommendations to improve repair manuals to highlight repair versus replace have been submitted to the TACOM Life Cycle Management Command. These changes are essential to cutting repair costs.

Field-Level Tire Assembly Repair

Tire assembly repair has not been a common practice for maintainers over the past 5 years. The “Tire to Wheel Assembly Transition Policy



Pvt. Shelby Lee, 25th Brigade Support Battalion, 1st Stryker Brigade Combat Team, 25th Infantry Division, makes authorized tire repairs, saving the unit hundreds of thousands of dollars.

for Army Tactical Vehicles, DTG: 292043Z,” issued as a Department of the Army message in April 2010, said that tire assemblies would be ordered from one of the main tire rebuild facilities instead of being repaired locally. But repairing a \$2 valve core assembly is a cheaper and more practical course of action than replacing a \$5,000 tire assembly.

Battery Recharging

Because of the extreme cold weather experienced in Alaska’s interior, the 1–25th SBCT’s batteries frequently fail. Prior to establishing battery recharging capabilities, the brigade replaced approximately \$400,000 worth of batteries in a 90-day period.

The brigade support battalion established a recharging station within the ground support equipment shop. Operations during the following 90 days yielded significant savings. Thanks to the recharging station, no vehicle batteries were requested through the supply support activity.

The Need for Institutional Support

The SBCT still faces other issues that impede further savings: a gap in generational knowledge, outdated technical manuals that do not coincide with current operating procedures, and the excessive amount of time it takes to receive parts.

The knowledge gap. An institutional knowledge gap was partially caused by the transition from civilian contractors to trained Army mechanics conducting Stryker vehicle maintenance. There is also a generational knowledge gap in the skills of field-level maintainers.

Ten years ago, engine repair was a common practice. Now, the replacement of a load handling system engine’s head gasket is not taught as part of current programs of instruction (POIs) used in advanced individual training. New maintainers do not know how to replace an engine head gasket even though it is an authorized field-level repair. The institutional knowledge of this common

practice left the Army when senior mechanics and technicians departed, leaving the current generation of mechanics to relearn basic field-level engine repair.

Engine assembly repair is only one example of assembly repairs that were once common for Army maintainers to perform. Mechanics once

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repaired many other assemblies, including starters, generators, radiators, and tires.

Given the likelihood of ongoing fiscal constraints, it is imperative that the Training and Doctrine Command (TRADOC) reestablish these lost skills by updating its current POIs with subassembly repair versus major assembly replacement.

Technical manuals. Outdated technical manuals (TMs) provided to field-level maintainers also pose significant challenges.

Many TMs used today for troubleshooting Stryker vehicles are out of sync with the current operating tempo and lack the details to repair equipment, specifically class IX (repair parts) assemblies. One example is the aforementioned engine troubleshooting procedures (gasket replacement). Another is that the TMs for the Stryker FUPP call for assembly replacement rather than a simple repair by replacing a temperature sensor, speed sensor, or wire harness on the FUPP assembly.

A third example is the troubleshooting steps pertaining to remote weapon systems. In most cases, the TM will suggest a component replacement that does not resolve the maintenance issue. A fourth example is that the TMs for the Stryker

indicate assembly replacement over the most cost-effective solution. The current TMs recommend replacing a broken water separator kit, which costs \$4,598. A better solution would be to order individual repair parts for the kit. The total cost to rebuild the water separator kit is only \$243.

The Army will save a tremendous amount of money by updating TMs to recommend repair instead of replacement of major assemblies. TRADOC needs to update POIs to strengthen troubleshooting techniques that have been lost during the past decade-plus of combat operations. These two recommendations will assist the Department of Defense in reducing the overall operating cost while maintaining a high operational readiness rate, skillful maintainers, and a highly trained fighting force.

Chief Warrant Officer 4 Steven Dewey is the support operations maintenance senior warrant officer for 25th Brigade Support Battalion, 1st Stryker Brigade Combat Team, 25th Infantry Division, at Fort Wainwright, Alaska. He holds an associate degree in applied science and a bachelor’s degree in homeland security from Thomas Edison State University. He is a graduate of the Warrant Officer Candidate School, Warrant Officer Basic Course, and Warrant Officer Advanced Course.

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